

REVISIONS																				
SYMBOL	DESCRIPTION															DATE	APPROVAL			
—	Original Release															4/29/05	3NH			
SHEET REVISION STATUS																				
SH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REV	-	-	-	-	-	-	-	-												
SH	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REV																				
<b>ORIGINATOR:</b> T. J. Perry/QSS Group Inc. <i>TJ Perry/QSS</i>												<b>DATE</b> 4/28/05		<b>FSC: 5930</b>						
<b>APPROVED:</b> <i>TJ Perry/Commodity Specialist</i>												4/28/05		Switch, Thermostatic, Bimetallic, SPST, Corrosion Resistant Steel, Hermetic, Detail Specification for						
<b>CODE 562 APPROVAL:</b> M.A. Proctor/Code 562/GSFC <i>Vinod Patel for M.A. PROCTOR</i>												4/28/05								
<b>CODE 562 SUPERVISORY APPROVAL:</b> D.D. Lakins/Code 562/GSFC <i>Darryl D. Lakins</i>												4/28/05								
<b>ADDITIONAL APPROVAL:</b>														<b>S-311-641/03</b>						
<b>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION</b> <b>GODDARD SPACE FLIGHT CENTER</b> <b>GREENBELT, MARYLAND 20771</b>  <b>CAGE CODE: 25306</b>																				

## GSFC DETAIL SPECIFICATION

### SWITCH, THERMOSTATIC, BIMETALLIC, SINGLE POLE, SINGLE THROW (SPST), CORROSION RESISTANT STEEL, HERMETICALLY SEALED

The requirements for procuring the thermostatic switches described herein shall consist of this specification and the current revision of GSFC S-311-641.

#### PART NUMBER EXAMPLE:

<u>G311P641/03</u>	<u>702</u>	<u>S</u>	<u>040</u>	<u>A</u>	<u>065</u>	<u>A</u>	/	<u>C</u>
(A)	(B)	(C)	(D)	(E)	(F)	(G)		(H)

(A) GSFC PREFIX

(B) MOUNTING CONFIGURATION

- 701 = Bare Module (See Figure 1)
- 702 = .164-32 Stud Mount (See Figure 2)
- 703 = .190-32 Stud Mount (See Figure 3)
- 704 = .138-32 Stud Mount (See Figure 4)
- 705 = Narrow Slot-Slot Flange (See Figure 5)
- 706 = Hole-Slot Flange (See Figure 6)
- 707 = Tube Mount Adapter (See Figure 7)
- 708 = Bare Module with Strain Relief (See Figure 8)
- 709 = Bare Module with Lead Wires (See Figure 9)
- 710 = .250 Dia. Tube Mount Adapter and Lead Wires (See Figure 10)
- 711 = .164-32 Stud Mount with Lead Wires (See Figure 11)
- 712 = Hole-Slot Flange with Lead Wires (See Figure 12)
- 713 = .375 Dia. Tube Mount Adapter and Lead Wires (See Figure 13)
- 714 = Tube Mount Adapter and Lead Wires (See Figure 14)
- 715 = Hole-Slot Flange, wide (See Figure 15)

(C) S = Space Rated Thermal Switch

(D) Lower Operating Setpoint in °F

(E) A = Open on Rising Temperature  
B = Close on Rising Temperature

(F) Upper Operating Setpoint in °F

(G) Special Temperature Feature Code \*

(H) Special Physical Feature Code (See Figure section as applicable, Unit 7 code). Consult factory for special configurations not shown.

\* See Table 1 for non-standard operating temperatures, differential and tolerances. The setpoint tolerances may also be specified by adding a suffix to the ordering code:

/X/Y/Z where X = Closing setpoint tolerance  
Y = Opening setpoint tolerance  
Z = Minimum differential between opening and closing setpoints

Example: /3/2/6 represents:

±3°F on closing, ±2°F on opening and 6°F minimum differential.

## REQUIREMENTS

Dimensions, configuration and weight: see Figures 1 and on.

Switching action: Single Pole, Single Throw (SPST)

Storage temperature range: -184°F to +350°F (-120°C to +177°C)

Operating temperature range: -120°F to +300°F (-84.4°C to +148.9°C)

Contact rating: resistive load, 5.0 amperes at 28 VDC, 100,000 cycles  
3.5 amperes at 42 VDC, 10,000 cycles  
1.0 ampere at 120 VDC, 100,000 cycles  
1.0 ampere at 30 VDC, 1,000,000 cycles  
1.0 milliamperes at 1 mV, 100,000 cycles

Contact resistance: 0.025 ohms maximum, per MIL-STD-202, Method 307

DWV: 1250 VAC, rms, 60 Hz for 1 minute, terminals to case, per MIL-STD-202, Method 301

Vibration (Random): 20-2000 Hz, 23.5 grms, 24 minutes in most critical axis (unmonitored)

Shock: Tested to 4000g's, ½ sine, ½ millisecond.

Hermeticity:  $1 \times 10^{-8}$  atm cc/sec. maximum, per MIL-STD-202, Method 112, Condition C

CRBI (Contact Resistance Burn-In): 1000 cycles, 50 milliohms maximum each closure with missed cycle detection

Cleaning: 100% tested for cleanliness using micro-particle analysis (<1 mil particle limit)

DPA (Destructive Physical Analysis): Customer option. Performed per MIL-STD-1580, Rev. B

Acceptance Testing (100% of parts): Per Table I of GSFC S-311-641

Lot Acceptance testing: RGA (1000 ppm moisture maximum) and Group B

### Standard Tolerance Limits

Specified Temperature Setpoint Range	Opening Temperature Differential
-120 to 0°F (-84.4 to -17.8°C)	±6 ±3.3
+1 to +250°F (-17.2 to +121.1°C)	±5 ±2.8
+251 to +300°F (121.7 to +148.9°C)	±7 ±3.9

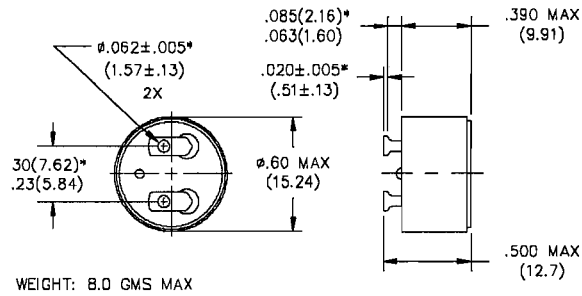
Approved source(s):

Manufacturer	Cage Code	Vendor Similar Part Number
Honeywell DSES, Redmond, WA.	OFYPO	700 Series

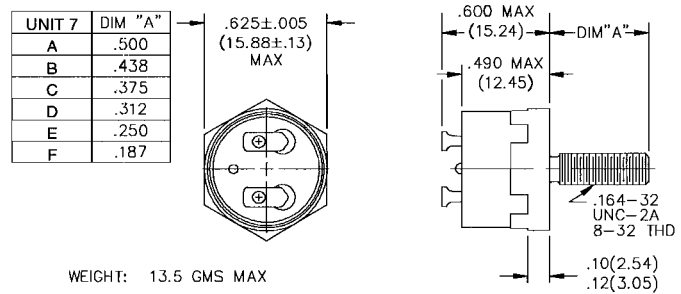
**Table 1    Special Temperature Feature Code**

<b>A</b>	<b>Setpoint tolerances are min-max. Differential shall be 5°F minimum.</b>
<b>B</b>	<b>Opening setpoint is min or max.</b>
<b>C</b>	<b>Closing setpoint is min or max.</b>
<b>D</b>	<b>Opening setpoint is <math>\pm 5^{\circ}</math> with 7° to 18° differential. Closing setpoint given is min or max. possible.</b>
<b>E</b>	<b>Closing setpoint is <math>\pm 5^{\circ}</math> with 7° to 18° differential. Opening setpoint given is min or max. possible.</b>
<b>F</b>	<b>Closing setpoint is <math>\pm 4^{\circ}\text{F}</math> with 11 to 19°F differential. Opening setpoint is min or max. possible.</b>
<b>G</b>	<b>Opening and closing setpoints are <math>\pm 3^{\circ}\text{F}</math></b>
<b>H</b>	<b>Opening and closing setpoints are <math>\pm 4^{\circ}\text{F}</math></b>
<b>J</b>	<b>Opening and closing setpoints are <math>\pm 5^{\circ}\text{F}</math></b>
<b>K</b>	<b>Closing setpoint is <math>\pm 2^{\circ}\text{F}</math>. Opening setpoint is min or max.</b>
<b>M</b>	<b>Differential shall be 5°F min.</b>
<b>N</b>	<b>Closing setpoint is <math>\pm 3^{\circ}\text{F}</math>. Opening setpoint given is min or max possible.</b>
<b>P</b>	<b>Closing setpoint is <math>\pm 4^{\circ}\text{F}</math>. Opening setpoint given is min or max possible.</b>
<b>R</b>	<b>Setpoint tolerances are Min-Max. Differential shall be 10°F Min.</b>
<b>S</b>	<b>Opening and closing setpoints are <math>\pm 6^{\circ}\text{F}</math>. Differential shall be 10°F Min.</b>
<b>T</b>	<b>Closing setpoint is <math>\pm 5^{\circ}</math> with 7° to 13° differential. Opening setpoint given is min or max possible.</b>
<b>U</b>	<b>Setpoint tolerances are min-max. Specify minimum differential (example: U/7).</b>
<b>V</b>	<b>Opening setpoint is min or max. Specify closing tolerance and minimum differential (example: V/5/7).</b>
<b>W</b>	<b>Closing setpoint is min or max. Specify opening tolerance and minimum differential (example: W/5/7).</b>

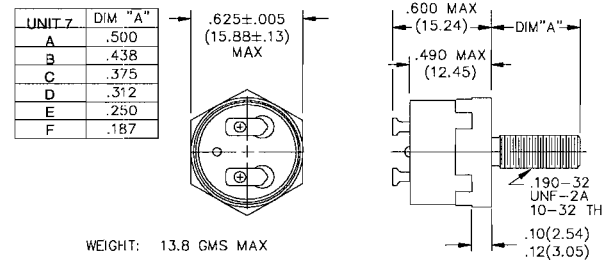
**Figure 1:**  
701 = Bare Module



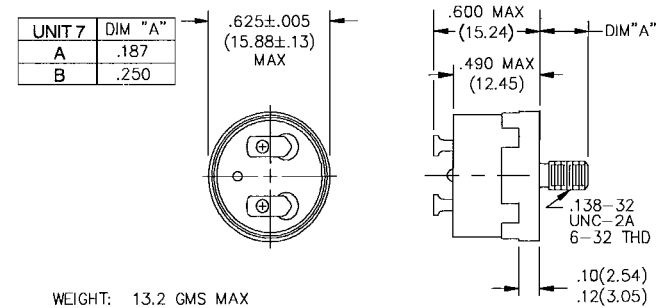
**Figure 2:**  
702 = .164-32 Stud Mount



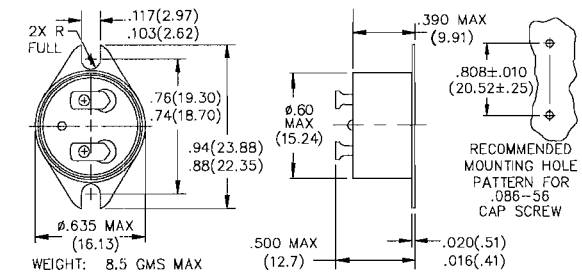
**Figure 3:**  
703 = .190-32 Stud Mount



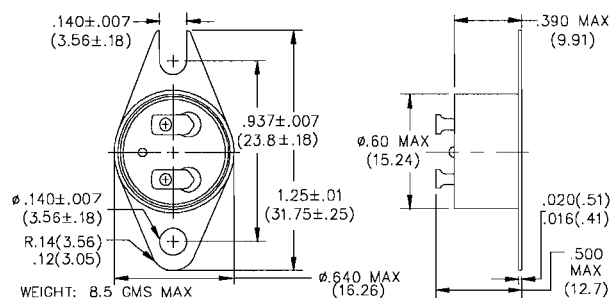
**Figure 4:**  
704 = .138-32 Stud Mount



**Figure 5:**  
705 = Narrow Slot-Slot Flange

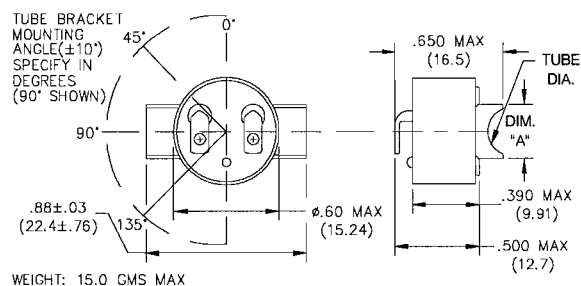


**Figure 6:**  
706 = Hole-Slot Flange

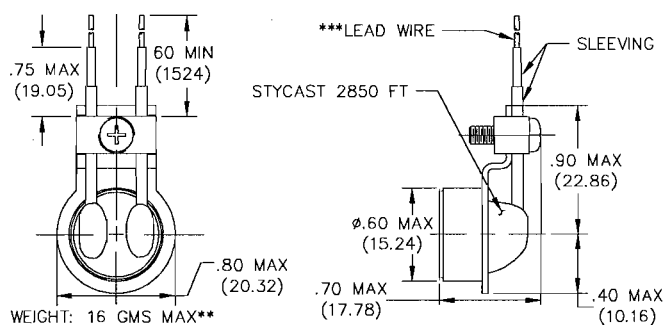


**Figure 7:**  
707 = Tube Mount Adapter

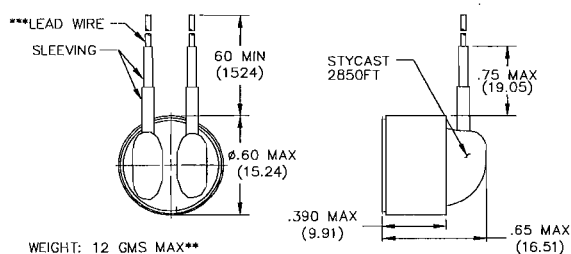
UNIT 7	TUBE DIA.	DIM. "A"
A	.250	.29
B	.375	.43
C	.373	.61



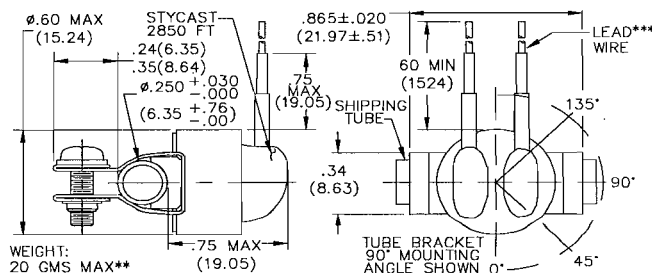
**Figure 8:**  
708 = Bare Module with Strain Relief



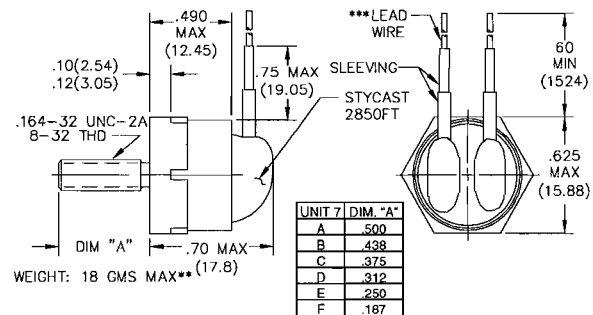
**Figure 9:**  
709 = Bare Module with Lead Wires



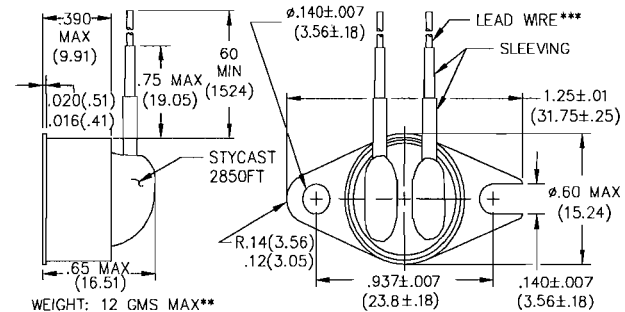
**Figure 10:**  
710 = .250 Dia. Tube Mount Adapter and Lead Wires



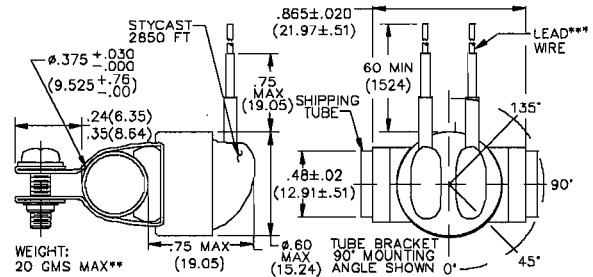
**Figure 11:**  
711 = .164-32 Stud Mount with  
Leas Wires



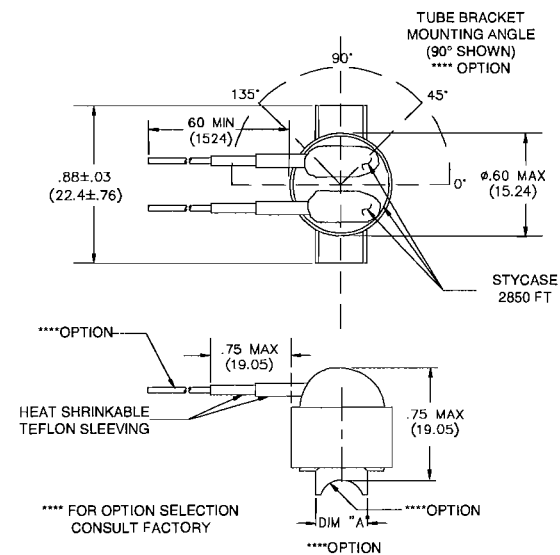
**Figure 12:**  
712 = Hole-Slot Flange with  
Lead Wires



**Figure 13:**  
713 = .375 Dia. Tube Mount  
Adapter and Lead Wires

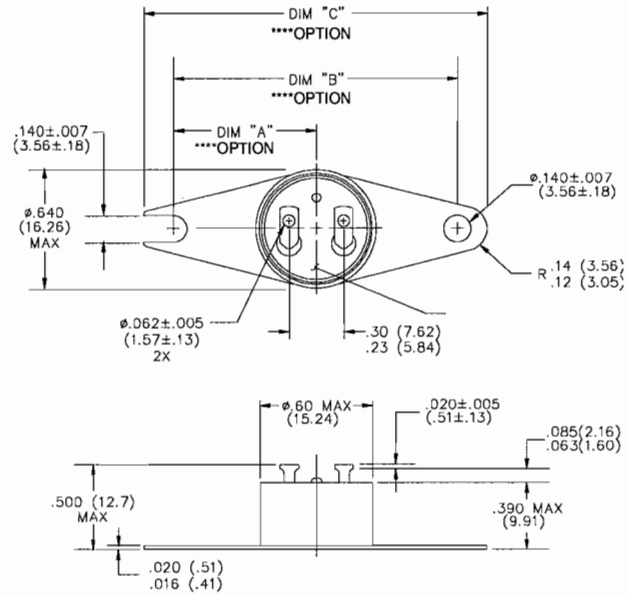


**Figure 14:**  
714 = Tube Mount Adapter and  
Lead Wires



Weight will vary by configuration.

**Figure 15:**  
**715 = Hole-Slot Flange, wide**



\*\*\*\* FOR OPTION SELECTION  
CONSULT FACTORY

Weight will vary by configuration

- \* Typical Dimension for all configurations.
- \*\* "WEIGHT" does not include weight of lead wires.
- \*\*\* Wire (where applicable) MIL-W-22759/43